

Advertisement Voice 00:00

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Narrator 00:27

It's 1921. Prominent American paleontologist Walter Granger is braving the Great Yangtze River to visit a remote area of southern China. His destination is Wushan Mountain in the Three Gorges region of Sichuan province. Granger's expedition will mark the start of one of the most significant stories in world archaeology. Sixty years later in 1984, Chinese archaeologist [Huang Wanbo] also comes to the Three Gorges to visit Wushan Mountain. For the next 20 years, he'll make an annual pilgrimage to the location. And from 2003, French archaeologist Eric Boeda starts commuting from Paris to Wushan each autumn. So just what is attracting these eminent scientists to this spot? The answer is known as dragon bone, not relics from a mythical beast but rather a quest to unravel the secrets of a very real mystery that has remained buried in the dust for 2 million years. A mystery of our remote ancestors. So what is dragon bone? And what is its connection to human beings? Tales about dragons abound in Chinese folklore and culture. At locations where archaeologists discovered traces of ancient ancestors, scholars started to name them with words related to dragons.

Deng Tao 03:00

[foreign language translated to English] It's first mentioned in the classic "Shan Hai". In remote antiquity, a hero called Yao slew many a monster and their bones were buried. Later these bones were exposed and discovered by people who called them "Dragon bone". Today we know it's actually the fossil of a mammal. Like today, ancient people used it as a medicine. If you visit a traditional medicine shop you may find a casket labeled 'dragon bone'.

Narrator 02:58

Whatever its origin and use, it is dragon bone that leads to a major archaeological discovery at the end of the 19th century. In 1899, Wang Yirong, a government official of the Qing dynasty, visits Jiangjin [ph] for treatment. His hobby is collecting metal and stone. He also has a habit of studying medicinal materials bought from local medicine shops. One day, he discovers some mysterious carved symbols on the so called dragon bones and immediately sends someone to buy all the dragon bones he can find. Similar symbols, which he names as carved writing of the Qing dynasty, are present on most of these bones. Later, a Chinese paleography expert re-describes the symbols as script from the Shang dynasty. Called carapace bone script, they are the earliest Chinese characters discovered to date.

Narrator 04:54

It is now in 1921 that the American paleontologist Walter Granger comes to the Wushan Mountain area in the Three Gorges to seek out dragon bone fossils. He visits the local medicine shops and finds examples of exactly what he's looking for. Encouraged, he establishes a permanent base and employs villagers to dig up more of the bones. Five years later, he leaves with literally thousands of dragon bone fossils from the region.

Advertisement Voice 05:51

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Narrator 06:36

The foreigner's surprising interest in old bones generates a gold rush like excitement amongst the locals. Amongst them is Mu Jifu [ph], a doctor from nearby Longping village.

Mu Jifu 06:51

[foreign language translated to English] I was the first witness; still a teenager. There was a local merchant called Ding Dagui, I showed it to him and asked what it was. He told me it was dragon bone, a kind of medicine. I asked him if he'd buy it. He said yes and quoted a price. Then I began to dig. Piles of dragon bone were dug up; the daily output weighed a lot.

Long Shizhen

[foreign language translated to English] At the time we sold more than 1500 kilos including about 40 kilos of teeth for a very low price.

Narrator 07:50

Large quantities of dragon bone are sold to local medicine shops and other outlets. What few realize is that they are actually destroying valuable ancient relics and remains. Meanwhile, at another Chinese location, the 1930s see a dramatic find that becomes known as Peking Man. The discovery shocks the world as these skulls reveal that Peking Man lived at least 500,000 years ago. The skulls disappear when the Japanese Army capture them during World War II but are still considered authentic by domestic and foreign archaeologists since a number of experts are known to have examined them. At the time, prominent archaeologists believe that Peking Man is the earliest ancestor of the Chinese and Eastern Asian peoples. And the place where Peking Man was discovered is named the Dragon Bone Mountain.

Narrator 09:09

Across the world in the East Africa Rift Valley, another find stuns the archaeological world. Discovered in 1974, the skeleton known as Lucy dates back a staggering 3.2 million years. From the analysis of her fossils, international archaeologists are unanimous that she is the earliest known ancestor of mankind. Ten years later in 1984, a new group arrives at Longping Village in search of dragon bone. It's an archaeological team consisting of experts in vertebrate paleontology and human paleoanthropology from the Chinese Academy of Sciences and Chongqing Museum of Natural History. Huang Wanbo is the team leader. By this time, the dragon bones around Longping have been pillaged by local villagers for nearly 20 years. So what remains for Huang and his team to find?

Huang Wanbo 10:19

[foreign language translated to English] We traveled the Yangtze River to Wushan and were welcomed by Director Wu from the Culture Bureau. He told us of a caved called "Dragon cave" south of the river and recommended we have a look.

Narrator 10:42

Huang and his team find nothing in this deep and legendary cave. Villager Mu Jifu however provides a clue.

Mu Jifu 10:52

[foreign language translated to English] "Have you ever seen dragon bone?" he asked. I said, "Of course, we dug them up to sell."

Huang Wanbo 11:01

[foreign language translated to English] I was delighted and asked, "Could you please show us the place?"

Mu Jifu 11:06

[foreign language translated to English] I brought them here.

Huang Wanbo {timestamp}

He led the way to a corn field. Entering the field, we found various fossil fragments lying around. Picking up a handful of them at random, we found fossils of Stegodons, Sinomastodons and Hyaena. They had been extinct for a long time and the fossils were very old. This gave me an idea; if the villagers sold them to the local Department maybe they still had some. So I went there after supper. The director took out a full basket. They were all fossils and perfectly preserved. Then formal excavation began, and more and more fossils were discovered. For research convenience, we named the site "Longgupo" (Dragon Bone Slope).

Narrator 12:09

The Three Gorges of today came into being about 500,000 years ago. Before that, there were no high mountains nor big rivers or valleys but rather an environment of lakes and forests with a warm and wet climate.

Liu Dongsheng 12:25

[foreign language translated to English] Judging by the site and the fossils, it seems there was once a complex animal colony here, which indicated that the climate was warm. At that time, the Yangtze River region was more humid. It was an environment with a combination of prairie, forest and shrub. And that was suitable for human beings to survive.

Narrator 13:16

Representatives from the Wun County Museum and the Wushan Relics Protection Station join the team in the autumn of 1985 and a major excavation gets underway. This is the formal excavation site at Longgupo. First, the team members clean up the work area, then start to dig for fossils following a meticulous plan. They judge and classify any fossils collected by the workers at break time. But it is Huang himself who makes the first breakthrough with a tooth a bit larger than a broad bean. It looks like a pig's tooth, but the shape of the top and the marks and growth line on the tooth's surface are quite different from that of a pig. After thorough scrutiny, they decide it's the tooth of a quadrumana or four-handed primate. In fact, it's the tooth of a giant ape. For Huang, this opens up dramatic new possibilities.

Huang Wanbo 14:49

[foreign language translated to English] Giant apes and early humans may live in the same ecosphere. So could human fossils also be discovered at "Longgupo" as happened in the "Dragon Bone Cave" of Jianshi County, Hubei Province?

Narrator 15:07

If early human fossils are found, the small slope at Wushan may well rewrite the history of human evolution. The very same day of the giant ape tooth discovery, Huang revisits the work site alone.

Huang Wanbo 15:31

[foreign language translated to English] I used to visit the squares and collect fossils in my spare time. In one square at the eighth stratum, I picked up a piece of bone that looked like a jawbone. I used a needle to clean it until the tooth face emerged. It was not the tooth of a pig or deer but more like the tooth of a quadrumanus. I was so excited and my heart beat more and more quickly. I removed the soil from the tooth face with cotton and water. In fact, there were two teeth. I rushed back and told everyone we had found treasure. A length of quadrumanus's jawbone with two teeth on it.

Narrator 16:37

The team members can barely contain themselves. From the abrasion degree of the tooth face and the shape features of the gum, a preliminary conclusion is drawn that the owner was an old female. The team name it the Wushan Old Lady. Spurred on by the great significance of the discovery, the following October the combined archaeological team returns to Longgupo once more. Including archaeologists and workers, the team now consists of 30 members. For archaeologists, patience and meticulous excavation are essential but good luck is also very important. Huang Wanbo is a lucky dog. That's why he enjoys so many archaeological discoveries, a team member jokes. The question is, will Huang's luck hold? The answer comes almost immediately when one of the workers unearths a small fossil in the seventh layer. He looks at it for a while and then passes it to a researcher from the Chongqing Museum of Natural History.

Yang Xinglong 18:31

[foreign language translated to English] I was certain it was a fore tooth fossil of a human being. My heartbeat raced. I put the tooth into a matchbox and pocketed it. I went back to work without telling anybody. After finishing work that evening, I met one of the team members who was a woman researcher specializing in primates.

Gu Yumin {19:06}

[foreign language translated to English] He showed me the tooth and asked, "Do you know what kind of tooth this is?" I looked and cried out, "Amazing. It's from a human being." From the occlusion face, we found a milk tooth without any abrasions. According to the teething order, the date for tooth replacement was about 7 or 8 years, so I guessed it was from a youth, comparing it with teeth from *Homo erectus pekinensis*, it was probably from a female.

Narrator 19:47

Based on the degree of abrasion and the shape features, this time the archaeologists judge it to be the tooth of a young female and name it the Wushan Maiden. Through deductive research on the length of mandible and tooth fossils discovered in the excavations, they describe it as the Wushan Pithecanthrope. A number of early human being sites have already been discovered in different areas of China. So the key question for the archaeologists now is how far back the Wushan Pithecanthrope is from our era? How can they calculate its age? And is it human or just ape? The archaeologists can estimate the relative date of the fossils by the condition of the stratum in which a fossil is discovered.

Huang Wanbo 20:47

[foreign language translated to English] We divided the stratum into three parts: upper, middle and lower. The upper part

is pebbles, the middle part is the civilization stratum where the Pithecanthrope exists and the lower part consists of cave bottom clay. From the condition and the date of the stratum, we can conclude that the Wushan Pithecanthrope lived in the period between 2.04 and 1.48 million years ago. Paleomagnetic dating places it with an event 2.04 million years ago.

Narrator 21:27

So how will the archaeologists establish a conclusive date for the Wushan Pithecanthrope? They'll start with electron spin resonance or ESR tests.

Chen Teimei 22:41

[foreign language translated to English] ESR dating shows that the date of the tooth fossil is no less than 1.1 to 1.3 million years. We published this in the famous magazine Quaternary Science Reviews. This date should be its lowest limit. The date of the third to the fifth stratum is no less than 1.2 million years. The Wushan Pithecanthrope is from the eighth stratum, so is surely much older.

Narrator 22:15

At a laboratory of the Chinese Academy of Sciences, researchers carry out a paleo magnetism test on the 100 soil samples taken from Longgupo. The results reveal their age to be approximately 2 040,000 years. This conclusion however doesn't satisfy everyone including paleoanthropologist Russell Ciochon from Iowa State University in the USA. The American scholar, casting doubt on the date of the Wushan Pithecanthrope, comes to Longgupo himself and collects mammal fossils from the fifth stratum including the microspecies giant panda and the elephant-like Sinomastodon. Then Ciochon returns home with both his samples and the mystery. In America with the help of an advanced dating method, he estimates that the fossils from the fifth stratum are over 1 million years old. Because the Wushan Pithecanthrope fossil is from the eighth stratum, he concludes it must be considerably older. Finally in 1995, Russell Ciochon and Chinese archeologists collaborate on a treatise entitled Early Homo and Associated Artifacts From Asia, which is published in the authoritative British archeology magazine, Nature.

Eric Boeda 24:00

[foreign language translated to English] The site of the Longgupo became internationally known after the publication in 'Nature'. For a western researcher it's a dream to be able to work there or one day visit the site.

Narrator 24:26

From the soil layer in this mysterious slope, archaeologists discover 116 species and over 5000 ancient mammal fossils. If we could travel back in time and view the area as it was 2 million years ago, we might spot species of elephant and rhinoceros, maybe monkeys leaping around in the forest canopy or a saber toothed cat stalking its prey. The dating results of the Longgupo stratum released by the Chinese and foreign archaeologists eventually eliminate doubts about the Wushan Pithecanthrope's age. The consensus is that the tooth owner lived approximately 2040,000 years ago. But Huang still faces another major question being raised in Chinese and overseas archaeology circles. From the mandible and three tooth fossils, he can determine that they belong to a kind of high level quadrumania. But can he prove that they were human beings, not just apes? If he can, then the history of human origins may need to be rewritten. Academics are divided on the issue.

Wu Xinzin 26:05

[foreign language translated to English] I hold that it is not a human being but an ancient ape, for there is only a length of incomplete mandible, so we still need more evidence. The quadrumania discovered in Wushan could

only prove the existence of giant apes. Some believe it is actually the pithecanthrope but I think it is just a kind of ancient ape.

Narrator 26:45

If a skull or even limb fossils of the same time period as the Wushan Pithecanthrope can be discovered in the Wushan area, then the human or ape debate can finally be resolved. Archaeologists discover plenty of hominid fossils and a small quantity of skulls. But there's one other thing that can really settle the issue.

Liu Dongsheng 27:19

[foreign language translated to English] Stone artifact.

Wu Xinzhi 27:20

[foreign language translated to English] Stone artifact.

Huang Wanbo 27:21

[foreign language translated to English] Stone artifact.

Hou Yamei 27:23

[foreign language translated to English] To judge if it's a Homo site or not, firstly relies on fossils of human beings, such as skulls, or limb bones; second, we can check if there are any relics, actually stone artifacts are the exact things that can survive and that only mankind could leave behind.

Xang Xinglong 28:01

[foreign language translated to English] It is commonly acknowledged that ancient apes were unable to make artifacts, only human beings have thoughts and can make artifacts.

Narrator 28:01

Previous evidence shows that human ancestors were capable of making tools 2 million years ago. If a stone artifact is discovered at the Wushan excavation, the Wushan Old Lady and the Wushan Maiden may be proven to be the Chinese people's remote ancestors. The team focuses on the limestone terrains at Longgupo. But from 1985 to 1988 apart from various species of animal fossils, four years of hard work only yields up two examples of unidentified spotted stones. The key question is, are they artifacts?

Hou Yamei 28:47

[foreign language translated to English] The two stone artifacts are very important as they are the earliest ever discovered at the "Longgupo" site. Li Yanxian took charge of the research work, carrying out a professional and careful observation and analysis on the two artifacts and concluded that one was a stone hammer and the other a cutting and smashing tool. We also discovered some regular flaking processes from these artifacts.

Narrator 29:18

Specialists call this a smashing stone hammer made of quartz. This one, a protruding blade chopper made of andesite. Traces on them suggest that they were not formed naturally but by human force.

Huang Wanbo 29:46

[foreign language translated to English] At that time, Professor F. Clark Howell from Berkeley University of California, a world-famous palaeoanthropologist was visiting our institute in Beijing. Since he was experienced in this field, I showed him the two stone samples and asked if they were artifacts. He became quite excited and saying they were definitely stone artifacts.

Narrator 30:14

Traditionally, homo used mainly gravel, quartz and lava to make their stone artifacts as these stones could kill wild animals without being broken or losing their sharpness. Buoyed by their success, the archaeologists now decide to change their excavation method, concentrating on the search for stone artifacts. And it pays off with a large number of exciting new finds. They're sent to eminent Professor Jia Lanpo for detailed analysis.

Jia Yuzhang 31:03

[foreign language translated to English] He was very interested in the stones, but at the same time, he wasn't sure if they were genuine artifacts.

Narrator 31:19

Famous French archaeologist Professor Yves Coppens, who had helped with the excavation of Lucy in Africa, is also surprised by the stone artifacts discovered at Longgupo.

Yves Coppens 31:32

[foreign language translated to English] In the professor's office in 1995 were the stones discovered in this period at Longgupo. And these stones were immediately apparent to me as stones incontestably sharpened by humans so certainly prehistoric artifacts.

Narrator 32:07

One day in October 1998 while the team members are still searching for stone artifacts, a different kind of find adds another key piece of evidence. It's a relatively ordinary deer bone. But what is interesting is that it's been broken into three pieces. The fact that the bones join together perfectly poses a question. What broke them? Natural force or human power?

Hou Yamei 32:45

[foreign language translated to English] It was broken into three pieces in a Proterozoic environment. From what we know of such an environment, it was impossible for an external force to have broken it. There were incision traces made by the very kind of artifact found at Longgupo. It illustrated the life style of Homo at that time. They made stone artifacts and used them to chop and smash the bones. Taking meat from the bone, especially limb bones which have more meat, was a series of actions to get meals. As for culture tradition, I feel that Longgupo possibly exhibits some different elements which have not been discovered in early human sites in East Africa.

Narrator 33:57

Five years on and 2003 sees a season with maple leaves dying much of the Longgupo region red. New members join the combined archaeological team. Prominent French archaeologist Professor Eric Boeda of the University Paris Nanterre suggests new methods for the excavation. He's convinced the stone artifacts were made by primitive humans.

Eric Boeda 34:27

[foreign language translated to English] These were essentially tools that were fashioned. Once could say that at Longgupo these were not the first tools, they had already developed. Chronologically, Longgupo is a moment of technological evolution in China and there must be older sites with even more primitive artifacts.

Narrator 34:55

The Sino-French joint team arrives at the small slope that is attracting all the attention in world archaeological circles. It's now 19 years since Huang first came to Longgupo and he's keen to redouble his efforts to resolve the mystery, hoping for a breakthrough. This time, his team changes the former pit area from two meters by two meters into four one meter by one meter pits and carry out a more meticulous excavation following procedures suggested by the French archaeologists. Almost immediately, they are stopped in their tracks by a new discovery. It's an area with a number of animal limb bones arranged in an unnaturally ordered and overlapping fashion. After careful analysis, they discover the finds are four limb and back limb bone fossils of large herbivorous animals including elephants, cattle, and deer. Importantly, the fossils have smooth bone surfaces without any bite traces from carnivorous animals. This unusual collection astonishes the archaeologists.

Huang Wanbo 36:37

[foreign language translated to English] I had never seen anything like this in my life that was the first time Mr. Boeda also said, "I have been to many countries, but I haven't seen this kind of scene before, it's shocking."

Narrator 36:56

So why are the bones concentrated and buried on such a large scale? Why are there only limb bones? Where are their vertebrae, ribs, pelvis, feet, bones and skulls? Did they die naturally or drown in the river? Or were they killed by carnivores or human beings that could already make artifacts?

Christophe Griggo 37:26

[foreign language translated to English] If these bones were swept away by the river, they should have been oriented in the same direction. And that's not the case at Longgupo. At Longgupo there are bones, often complete, which are oriented in different directions, with little or no trace of carnivores. If it was a carnivore, there'd be plenty of traces of bite marks on the bones. This is not the case at Longgupo.

Narrator 37:39

At the excavation site besides a large quantity of limb bones of herbivorous animals, archaeologists also discover some stone artifacts and flakes mingled in with these bones. Significantly, there are distinct smashing traces in some of the deer bones and the stone artifacts and limbs are from the same time and place. Collectively, the finds enable the archaeologists to build up a picture of the environment that Wushan homo could have inhabited. It was a forested area less mountainous than today. Prehistoric human beings usually ambush their prey using spears to stab the animals and then tracking them as they tried to escape. When the prey was weak enough, they'd finish it off. The animals would have lived below the cave at Longgupo with the prehistoric humans venturing out to hunt or collect carcasses to bring back to their shelter.



Narrator 39:50

After over 20 years of excavation at the Longgupo site, fossils of homo, giant ape, and 120 kinds of ancient vertebrate have now been unearthed. Many of the fossils leave clues to the times they lived and died in. The archaeologists research European discoveries and come up with the following scenario: In traditional hunter-gatherer society, the males were usually in charge of hunting large animals whilst the females concentrated on picking plants and hunting the smaller animals. After obtaining quantities of food, the females learned to store it back at their caves. A system of divided labor gradually developed. According to the fossils discovered in the cave at Longgupo, archaeologists judge that the area was not only a beautiful Shangri-la like location but also a life and death arena. Saber toothed cats would have been patrolling the area and there were a large number of hyena packs. These were natural enemies of human beings usually attacking the Wushan pithecanthropus in their caves. The hyena was a fierce animal that all ancient humans must have feared. Today, hyena packs still live on the plains of the East African Great Rift Valley. Wolf sized animals, they are one of the fiercest carnivores in the world feared even by lions.

Narrator 42:00

At Longgupo, the prehistoric human beings were only between one and one-and-a-half meters in height. Survival would have been impossible if they hadn't developed stone artifacts and weapons. Although these stone artifacts may seem rudimentary, in the right hands they became lethal weapons. Today it is hard to be certain of their hunting system. But we do know that thinking and cooperation is very important for hunting and that is a stepping stone to the birth of ideology and culture. The stone artifacts of Longgupo exhibit different features from those of the East African Great Rift Valley, representing a unique early stone artifact industry and culture. As a result, the owner of these three teeth can be described as Wushan Homo or Man. Two million years ago, the Wushan pithecanthropes led a primitive life but their development easily surpassed that of animals. So, the existence and multiplication of the Wushan Homo proves that there were human beings in East Asia more than 2 million years ago, probably the ancestors of Homo Erectus in China.

Huang Wanbo 44:01

[foreign language translated to English] I worked in the Three Gorges from 1984 to 2005. Over the period I compiled statistics on the Home fossils discovered in the environment. The earliest is Wushan Homo, over 2 million years. The closest to Wushan Homo is Jianshi County Homo, also around 2 million years; Homo Erectus Yuanmouensis is 1.7 million years ago; Lantian Homo is 1.15 million years; then comes Changyang County Homo sapiens about 200,000 years ago; then Fengjie County Home sapiens, Gaundu Homo sapiens and Heliang Homo sapiens. This is to say there is no interregnum from the Home of 2 million years ago to the Homo sapiens of 10,000 years ago, and unaffected by foreign cultures and genes.

Liu Dongsheng 44:56

It is possible to find even older and more primitive human beings in China, namely the origin place of human beings in our homeland.

Huang Wanbo 45:32

Where are the Chinese people from? The Three Gorges of the Yangtze River. That is the very cradle of the Chinese.

Narrator 45:32

However some doubts still remain about this great discovery. Because of the discontinuity of the archaeological process, anthropologists are still to work out exactly why the Wushan Homo left this place. Did their caves

collapse? Did hyenas break in? Or was there a sudden climate deterioration into an ice age? And where did they go? Like the discovery of the human ancestor Lucy in East Africa, the Wushan Old Lady and the Wushan Maiden give us a chance to imagine their lives. But questions remain unanswered. How long did they live? How many children did they have? When and how did they die? So can the Chinese assume they originated in the Three Gorges of the Yangtze River over 2 million years ago? Or are they descended from a more recent migration from Africa? Today an international scientific debate continues to rage over the issue. For now, the dragon bones of Longgupo provide a tantalizing glimpse into an ancient past that is our collective heritage.